

KRUCHANOV, K.; DUTKOV, L.; LITVINSKY, N. [LITVINSKIY, N.]; NIKOLOVA, V.

Effect of certain factors on the gel-forming properties of
sunflower lecithin. Zh. fiz. khim. 57 (1983) 9, 1661-1664.

1. Higher Institute of Food and Light Industry, Sofia, Bulgaria.

VODENICHAROV, M.; LYUTSKANOV, S.; STANCHEV, Y.; BOZHKO, V.

Automatic device for regulating the level of melted glass in
pot furnaces. Stek. i ker. 20 no.6:39 Je '63. (MIRA 16:6)

1. Nauchno-issledovatel'skiy institut silikatnoy promyshlennosti
i stroymaterialov, Narodnaya Respublika Bolgariya.
(Glass furnaces)

VAFINA, N., master muzhskogo verkhnego plat'ya; NOVRUZOV, M.;
CHEREPNINA, M.; ZANTBERG, L. (Kiyev); YEGOROV, Yu. (Pererva);
FEDOSENKO, A. (Minsk); LYUTSKO, A.; SMIRNYAGIN, V., instruktor;
NIKOLAYEV, I.; KHARAK, G.

Our labor gifts to the congress of the builders of communism.
Mest.prom.i khud.promys. 2 no.10:2-5 0 '61. (MIRA 14:11)

1. Shveyunny kombinat, g. Ivanova (for Vafina).
2. Sekretar' partbyuro kombinata nadomnogo truda, Baku (for Novruzov).
3. Sekretar' obkoma profsoyuza rabochikh mestnoy promyshlennosti i kommunal'nogo khozyaystva, Rostov-na-Donu (for Cherepnina).
4. Glavnyy inzhener raypromkombinata, g. Slonim Belorusskoy SSR (for Lyutsko).
5. Respublikanskiy komitet profsoyuza rabochikh mestnoy promyshlennosti i kommunal'nogo khozyaystva, Kishinev (for Smirnyagin).
6. Sekretar' oblastnogo komiteta profsoyuza rabochikh mestnoy promyshlennosti i kommunal'nogo khozyaystva, Pskov (for Nikolayev).
7. Nachal'nik otdela truda i zarplaty Ministerstva mestnogo khozyaystva Estonskoy SSR, Tallin (for Kharak).

(Efficiency, Industrial)

ZHIVILOVA, L.M., kand.tekhn.nauk; LYUTS'KO, V.V., tekhnik; NEBOL'SINA, T.V.,
tekhnik; SHKULIN, N.A., inzh.; MAKAROV, Ye.A., inzh.

Automatic device for indicating water hardness. Elek.sta. 32
no.4:40-44 Ap '61. (MIRA 14:7)

(Feed-water purification)
(Chemical engineering—Equipment and supplies)

MEDOVAR, B.I.; LYUTSUN-KHUDIN, V.A.

Rapid method of estimating the tendency of austenite steels
and alloys to local failure. Zav.lab. 29 no.1:81-86 '63.

(MIRA 16:2)

1. Institut elektrosvarki imeni Ye.O.Patona AN UkrSSR.
(Austenite--Testing)

LYUTTS, A.F., dotsent, kandidat tekhnicheskikh nauk.

Measuring angles in projecting railroad lines by tape and
laying out curves without the use of tables. Trudy NIIZHT
no.7:35-51 '49. (MLRA 9:10)

(Railroads--Surveying)

LYUTTS, A. F.

lay out in large scale construction: basic theory, 1960, 1st ed. (revised 1961)
Kontopreficheskiy lit-ry, 1962. 1. 1. (5-145145)

QPC1.15

270715, A.F.

LYUTTS, A.F., doktor tekhn.nauk, prof.; PAYZANSKIY, A.A., red.;
KOMAR'KOVA, L.M., red.izd-va; ROMANOVA, V.V., tekhn.red.

[Laying out large construction projects; basic principles]
Razbivka krupnykh sooruzhenii; osnovnye polozhenia. Izd.2-oe,
ispr.1 dop. Moskva, Izd-vo geodez.lit-ry, 1957. 255 p.

(MIRA 11:1)

(Building)

(Surveying)

LYUTTS, Aleksandr Fedorovich, prof.; SOROKIN, Vasilii Pavlovich,
dotsent; ZARETSKIY, A.O., inzh., red.; SERGEYEVA, A.I., inzh.,
red.; BOBROVA, Ye.N., tekhn.red.

[Survey work in road construction] Geodezicheskie raboty v
putevom khoziaistve. Moskva, Gos.transp. zhel-dor.izd-vo,
1959. 183 p. (MIRA 12:9)
(Surveying) (Road construction)

S/270/63/000/001/002/024
A001/A101

AUTHOR: Lyutts, A. F.

TITLE: On introduction of new technology and advanced technique in conducting railroad explorations

PERIODICAL: Referativnyy zhurnal, Geodeziya, no. 1, 1963, 17, abstract 1.52.108
("Tr. Novosib. in-ta inzh. zh.d.transp.", 1962, no. 26, 75 - 86)

TEXT: The author states that in majority of cases explorations and projecting of railroads can be conducted in two stages: draft and operational project. During the first stage aerial surveys must be carried out whose materials are then used for project documentation. In the second stage the project is transferred to the working site. Works in this stage must be conducted with the use of new geodetic instruments and methods. In particular, the author holds it as expedient to use medium-precision range finders, ДД-2 (DD-2), ДД-3 (DE-3), ДНТ-2 (DNT-2), and level instruments with inclined directional rays for traversing routes in crossed localities. The preference is given to level instruments with stepped-inclined axis ННЦ (NLS) whose sighting axis can be inclined

Card 1/2

On introduction of new technology and...

S/270/63/000/001/002/024
A001/A101

within the range $\pm 30^\circ$. At distances from the instrument to the leveling rods from 100 to 125 m, the leveling precision with an NLS level instrument is higher 1.5 - 2 times than that with an HJ-3 (NL-3) and 3 - 4 times than that with a tachometer. In those cases when distances are determined with a cross-wire meter, it is recommended to employ rods with a nonius. An JП (LP)-type rod with a nonius is described. The order of traversing is described for cases when observations are conducted with a level instrument and a theodolite with a range finder attachment, with a level instrument with a range finder attachment only, and with a theodolite-level instrument with a range finder attachment. It is noted that in traversing routes by means of range finders, instead of laying out curves one performs the laying out of an equisecant (A. F. Lyutts "Tr. Novosib. in-ta inzh. zh.-d. transp.", 1949, no. 7). There are 6 references.

I. Letoval'tsev

[Abstracter's note: Complete translation]

Card 2/2

LYUTTS, A.F., dektor tekhn.nauk, prof.; PAZENKOV, Ya.I., inzh.

Vertical rod with a transversal mark for a range finder with
wires. Trudy NIIZHT no.30:17-21 '62. (MIRA 16:9)

LYUTS, A.F., doktor tekhn.nauk, prof.

Secant of equivalent length and its use in laying out rail-
road and highway routes. Trudy NIIZHT no.3045-53 '62.

Methodology of studying ways of surveying relief, representing
and interpreting it on maps. 85-96 (MIRA 16:9)

LYUTTS, A.F., doktor tekhn. nauk, zashchennyy deyatel' nauki i tekhniki,
prof.

First International Symposium on Engineering Geodesy. Izv.
vys. ucheb. zav.; geod. i aerof. no.2:137-138 '65.

(MIRA 18:10)

1. Novosibirskiy institut inzhenerov zheleznogo transporta.

MAKAREVICH, Vitaliy Sergeyevich; VEPRIK, Gennadiy Nikolayevich;
GERASIMOV, Vasily Petrovich; SIMONOV, Veniamin Georgiyevich;
GORODETSKOV, A.P., inzh., retsenzent; LYETISAU, A.G., inzh.,
retsenzent; ZUBLEVSKIY, S.M., inzh., red.; USENKO, L.A., tekhn.
red.

[Detection and elimination of faults in VL22²² electric locomotives]
Obnaruzhenie i ustranenie neispravnostei na elektrovozakh VL22²².
Moskva, Transzheldorizdat, 1962. 127 p. (MIRA 15:11)
(Electric locomotives--Maintenance and repair)

LYUTTSAU, Aleksey Grigor'iyevich; MER, N.I.; MERRO, Ye.M.; RYBIN, N.G.;
ROZENVASSER, M.A.; SOLOV'YEV, S.N.; FILIMONOV, V.P.;
SHAROYKO, V.V.; MEREZHKO, V.G., retsenzent; USENKO, L.A.,
tekhn. red.

[On the road of great initiative] Po puti velikogo pochina.
Moskva, Transzheldorizdat, 1961. 75 p. (MIRA 15:2)

1. Zamestitel' nachal'nika Glavnogo upravleniya lokomotivnogo
khozyaystva Ministerstva putey soobshcheniya (for Merezhko).
(Railroads--Employees--Labor productivity)

LYUTTSAU, A.G., inzh.

Two instructive cases. Elek.i tepl.tiaga 5 no.4:28-29 Ap '61.
(MIRA 14:6)

(Electric locomotives—Repairing)

KOLYCHEV, G.K.; LYUTTSAU, A.G., inzh., retsenzent; MAKSIMOV, N.V.,
kand. tekhn. nauk, red.; VASIL'YEVA, N.N., tekhn. red.

[Block systems of d.c. locomotives] Blokirovki na elektro-
vozakh postoiannogo toka. Moskva, Transport, 1964. 62 p.
(MIRA 17:3)

LYUTSAY, S. V.

PA 243T62

USSR/Geography - Watershed, Stalingrad Oct 52

"New Data Concerning the Geomorphology of the
Volga Terraces in the Stalingrad Watershed Area,"
S. V. Lyutsay

"Vest Moskov U, Ser Fiz-Mat i Yest Nauk" No 7,
pp 149-163

Gives results of geological and geomorphological
research conducted in 1950 along the shores of
the future Stalingrad reservoir. Studies were
made of the bottom land and of the first, second,
third, and fourth layers above the bottom land,
with respective depths 4-9, 12-18, 19-32, 35-40,
and 50-70 meters.

243T62

14-57-6-11837
Translation from: Referativnyy zhurnal, Geografiya, 1957, Nr 6,
p 28 (USSR)

AUTHOR: Lyuttsau, S. V.

TITLE: An Analysis of Terrace Series (K analizu terrasovykh
ryadov)

PERIODICAL: Uch. zap. Mosk. un-ta, 1956, Nr 182, pp 153-167

ABSTRACT: Graphs showing the heights of terrace series have been
prepared for 60 rivers of the USSR and a few rivers in
adjacent countries. These graphs were plotted by
placing the index numbers of the terraces along the
abscissa axis, their median heights along the ordinate
axis. In every instance older terraces showed greater
height than the newer ones, a circumstance which is
related to the decreasing intensity of tectonic
movements in the Neogene and the Quaternary periods,
and which is probably also related to the destruction

Card 1/3

14-57-6-11837

An Analysis of Terrace Series (Cont.)

of early intermediate terraces by erosion. The graphs are different for rivers found in glaciated and in unglaciated areas and for rivers having a different number of terraces. The author has also prepared graphs of height variations on the surface of the terraces for 30 rivers, and complete graphs of terrace series for 40 rivers. The latter graphs show every stage in the formation of the terraces. The author has managed to isolate three morphometric terrace groups: the Neogene, the Likvinsko-Dneprovskiy and the Poslednepzovskiy. The graphs make it easy to compare the terraces of different rivers and also the terraces of a single river when data on their age is available. A comparison of the complete graphs and the graphs of the heights for the northern Donets with those of the Dnestr, Podkumok, Alma, and Kacha Rivers (the age of their terraces having been determined with reasonable accuracy) shows that the fourth terrace (26 m to 32 m) of the northern Donets, which S. S. Sobolev had identified as Wurmian must be considered as Dneprovskiy, the fifth (45 m to 49 m) as Likhvinian, and the sixth (72 m to 77 m) as Pliocene. This method also

Card 2/3

14-57-6-11837

An Analysis of Terrace Series (Cont.)

makes it easy to determine the size of an erosional incision over a definite period of time, and to show the relative intensity of erosion in different rivers. The article has been published for the purpose of discussions. A bibliography of 31 titles is included.

Ye. N. B.

Card 3/3

БЫУТТСАУ, С. В. , Cand of Geogr-Sci --- (diss) "Analysis of Bench Series
and Bench Complexes,"

Moscow, 1959, 16 pp (Moscow State Institute imeni M.V. Lomonosov. Geo-
graphic Faculty) (KL, 6-60, 121)

LYUTTSAU, S.V.

Shifting of the Moskva River bed and mechanism of the formation of flood-plain and above-flood-plain terraces. Vest. Mosk.un.Ser.biol., pochv., geol., geog. 14 no.2:201-204 '59. (MIRA 13:4)

1. Kafedra geomorfologii Moskovskogo gos. universiteta. (Moskva Valley)

LYUTTSAU, S.V.

Role of root systems of trees in the movement of weathering products
on slopes and in the relief formation. Vop. geog. no.46:169-178 '59.
(MIRA 12:12)

(Roots (Botany)) (Landslides)

LYUTTSAU, S.V.

Causes of the separation of outliers from cuestas and the mechanism
of this phenomenon. Izv. AN SSSR. Ser. geog. no.4:64-69 J1-Ag
'62. (MIRA 16:5)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova,
geograficheskiy fakul'tet.
(Crimean Mountains--Landforms)

LYUTTSAU, S.V.

Types and formation of slopes of the Lesser Khingan Mountains.
Biol. MOIP. Otd.geol. 37 no.4:147-148 JI-Ag '62. (MIRA 16:5)
(Khingian Mountains--Slopes (Physical geography))

LYUTSAU, S.V.

Characteristics of the terrace series and terrace complexes of the
East European Plane. Vest. Mosk. un. Ser. 5: Geog. 18 no.3:51-57
My-Je '63. (MIRA 16:6)

1. Kafedra geomorfologii Moskovskogo universiteta.
(East European Plane--Terraces (Geology))

Lyuttsan, V.G.

67 Structural Changes in Aluminum During Stress Relaxation.
B. M. Rovinsky and V. G. Lyuttsan. (Izv. Akad. Nauk
S.S.S.R., 1958, [Tekhn.], 1818-1821; O. Abt., 1958, 49, 6799).
—[In Russian]. The number of interference spots on X-ray
diagrams of pure Al in the elastic state decreases with pressure.
During stress relaxation, the number of spots again increases,
and the curve of growth of the spots is similar to the curve of
stress relaxation, which is explained by a lower state of
crystal perfection. After relaxation is completed, the
number of reflections on the X-ray diagrams is greater than
originally, and their size and shape are changed, indicating an
increase in the deformation and a breakdown of the
crystallites.

(1)

Lyuttsan, V. G.

✓ 3042. Roviushki, B. M., and Lyuttsan, V. G., Poisson's ratio in stress relaxation (in Russian), *Izv. Akad. Nauk SSSR Ost. khim. Nauk* no. 10, 1471-1474, Oct. 1953.

62
① Working with aluminum and copper and confining relaxation process to room temperatures, author experimentally developed a method of obtaining relaxation curves. The technique is based on determining transverse strain as a function of time while the initial elongation of a specimen remains constant, and then obtaining the Poisson coefficients also as a function of time. The initial longitudinal strain is made up of elastic and plastic strains.

Author makes the following observations:

(1) During stress relaxation, elastic strain decreases while residual strain increases. By extrapolation a relationship is found for determining Poisson coefficient at the instant of loading and prior to relaxation.

(2) For elastic strains and small limiting loads, the ratio of transverse compression is probably equal to 0.25.

(3) For plastic regions the Poisson ratio is 0.5. Technically, this is hardly attained.

(4) An important technical sense of Poisson coefficient follows from its additive nature. This provides a relation of elastic and plastic strains at the time of securing experimental data.

(5) Attempts to establish a relation between Poisson coefficients for pure materials and their position in the periodic chart

(OVER)

B. M. ROVINSHII

lacks sound physical support since Poisson coefficients are dimensionless mechanical constants rather than physical properties.

(6) Poisson values for certain materials are not constant when observed experimentally.

Author concludes that experiments Poisson values are determined by the magnitude of applied loading and the relaxation properties of specimens. Author recommends that the existing data in handbooks be considered with certain criticism.

V. A. Valey, USA

3/2

USSR

Structural changes in metals due to stress relaxation are quite small to be subjected to Roentgenographic analysis. Authors present a special method which determines the number of interference spots and investigates their character. This is done by x-ray back reflection procedure applied to metals of large crystal composition. Such materials in the unstrained state provide distinct interference spots or reflections. These spots become diffused due to plastic changes in crystallite forms.

Authors describe the experiments and the results, and offer the following conclusions: (1) The number of interference spots on x-ray diagrams for aluminum decreases while specimens are loaded within elastic region. During stress relaxation the number of these spots reappears increasing. (2) The curve of relative increase of spot numbers is analogous to the curve of stress relaxation. This phenomenon is due to changes in crystallite perfection. (3) After sufficiently completed relaxation, the number of reflections appears to be greater than the original number. Spots of reflections appear to be diffused. Their form and dimensions change. This is due to translations which produce increase in crystallite imperfections and lead to their fracture.

Hence, according to authors, this investigation establishes that the stress relaxation in aluminum at normal temperature is accompanied by slowly progressing irreversible changes of crystallite shapes in the aggregate.

V. A. Valey, USA

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1031 On the Formation of Hot Tears. V. G. Lyuttsau.
Henry Bruchler, Alameda, Calif., Translation. (From *Litovskoe Proizvodstvo*, p. 5, no. 2, 1954, p. 18-18.)
Origin and development of hot tears and their relation to alloy composition. Significance of temperature and crystallization range on hot tear susceptibility. Tables, micrographs, diagrams, graphs. 2 ref.

21

USSR/Engineering - Metallurgy

FD-1113

Card 1/1 Pub. 41-7/13

Author : Lyuttsau, V. G. and Rovinskiy, B. M.

Title : The influence of size of crystalline grain on stress relaxation in
 pure metals

Periodical : Izv. AN SSSR, Otd, tekhn. nauk 5, 91-94, May 1954

Abstract : Gives results of investigation of relationship of size of crystalline
 grain to relaxation stability of pure, well-annealed aluminum and copper
 at room temperature. Table; graphs. Four references.

Institution : .

Submitted : June 30, 1954

Lyuttsau, V.G.

USSR/Engineering - Metallurgy

FD-1126

Card 1/1 Pub. 41-7/17

Author : Rovinskiy, B. M. and Lyuttsau, V. G., Moscow

Title : Effect of previous plastic deformation on stress relaxation in pure metals

Periodical : Izv. AN SSSR. Otd. tekhn. nauk 6, 57-60, Jun 1954

Abstract : Gives results of experiment conducted on specimens of pure aluminum and copper in order to determine effect of previous plastic deformation on stress relaxation. Table; graphs. Three references.

Institution :

Submitted : July 10, 1954

USSR / Human and Animal Morphology (Normal and Patho- S-2
logical). Methods and Apparatus.

Abs Jour: Ref Zhur-Biol., No 17, 1958, 78988.

Author : Rovinskiy, B. K., Lyuttsau, V. G., Avdeyenko, A. I.
Inst : Not given.
Title : On the Application of X-Ray Shadow Microscopy
in Biology.

Orig Pub: Biofizika, 1956, 1, No 2, 163-166.

Abstract: Description of an X-ray micro-projector construc-
ted by the author which provides a photograph
with an enlargement of 200 times. Examples of
of X-ray micro-projections are cited.

Card 1/1

Tests were made on 3 samples of each alloy. A preliminary longitudinal elastic deformation of 0-0.80% was given, and the experiments lasted for ~500 hr. Relaxation was in the order $Al \rightarrow Cu \rightarrow$ alloys of Cu and Al. Increase in Al content caused a decrease in the relaxation. The rate of relaxation depends not on the concentration and nature of the solid solution, but on the amount of preliminary deformation. Alloying alters the bond strength of the lattice which changes relaxation and hardness. Thus relaxation can be used as an estimate of the high-temp. strength and the hardness of a metal.
8 ref. — N. E. R.

RG

16/11

LYUTSAU, V.G.

X ray structural investigation of the "white crust" originated on the friction surface. Tren. i izn.mash. no.11:204-209 '56. (MIRA 9:9)
(Mechanical wear) (Iron--Metallography)

LYUTTSAN, V.G.

plus
met
Stress

Structural changes in pure metals in the process of stress relaxation. B. M. Rovinskii and V. G. Lyuttsan. Izvest. Akad. Nauk S.S.S.R., Ser. Fiz. 20, 636-B (1950); cf. C.A. 49, 6790d. The change of x-ray spots obtained by using cross and radially shaped slits was observed on Al (99.99%) and Cu (99.92%), subjected to a small longitudinal deformation for 600 hrs. The metals were recrystallized to obtain large size grains. The pictures show irreversible changes in crystallite structure and also changes in their mutual orientation, caused by rotations and displacements along viscous crystal boundaries. S. Pakswar

2

VMP

USSR/ Laboratory Equipment. Apparatuses, Their Theory, Construction and Application. I

Abs Jour: Referat. Zhur.-Khimiya, No. 3, 1957, 27325.

Author : B.M. Rovinskiy, V.C. Lyuttsau, A.I. Avdeyenko.

Inst : Academy of Sciences of USSR.

Title : Needle-Shaped X-Ray Microprojector.

Orig Pub: Izv. AN SSSR, ser. fiz., 1956, 20, No. 7, 343-352.

Abstract: The conditions of obtaining an enlarged picture by the shadow method are formulated. An original construction of a microprojector with a point source of x-rays in the shape of the point of the anode needle (diameter of the focus spot = 0.6μ) bombarded by electrons is proposed. It is found that the resolution of the microprojector is 0.6μ .

Card 1/1

7phys ✓ Camera obscura for shadow x-ray microscopy. B. M. Roylinskii and V. G. Lyuttsau. *Izvest. Akad. Nauk S.S.S.R., Ser. Fiz.* 20, 863-3 (1960). This camera has a small opening of 0.6-1 μ , made in an Au foil 0.02-0.03 mm. thick and annealed at 500-600° with an electrolytically sharpened steel needle, by using a microhardness test app. The Au foil is fixed by a 1- μ layer of Zapon lacquer to a Pb plate. During exposure the camera, together with the sample and the photographic plate, rotate around the optical axis of the camera. The magnification is 100 and can be increased to 1000 with a 10-fold photographic magnification. The resolution is better than 1 μ . S. Pakswar

LYUTSAU, V. G.

137-1957-12-25057 D

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 12, p 304 (USSR)

AUTHOR: Lyutsau, V. G.

TITLE: Investigation of Stress Relaxation in Metals at Room Temperature by the Method of Measurement of Transverse Deformation and by Means of X-ray Analysis (Issledovaniye relaksatsii napryazheniy v metallakh pri komnatnoy temperature metodami izmereniya poperechnoy deformatsii i rentgenoanaliza)

ABSTRACT: Bibliographic entry on the Author's dissertation for the degree of Candidate of Technical Sciences, presented to In-t mashinoved AN SSSR (Machine Operations Institute, USSR Academy of Sciences) Moscow, 1957.

ASSOCIATION: In-t mashinoved. AN SSSR (Machine Operations Institute, USSR Academy of Sciences), Moscow

1. Metals-Stress analysis-Bibliography
2. X-ray analysis-Applications
3. Metals-Deformation-Measurement

Card 1/1

LYUTTSAU, V.G.

LYUTTSAU, V.G.; ROVINSKIY, B.M.

Obtaining stress relaxation curves from reflected X rays at elevated temperatures. Zav. lab. 23 no.8:961-963 '57. (MLRA 10:11)

1. Institut mashinovedeniya AN SSSR.
(Strains and stresses) (Radiography) (Metals--Testing)

AUTHOR: ROVINSKIY, B.M., LYUTTSAU, V.G. PA - 2131
 TITLE: The Relaxation of Orientated Microvoltages. I. (Relaksatsiya
 oriyentirovannykh mikronapryazheniy. I. Russian).
 PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol 27 Nr 2, pp 345 - 350 (U.S.S.R.)
 Received: 3 / 1957 Reviewed: 4 / 1957

ABSTRACT: A fully elastic deformation of crystalline bodies is directly determined only by measuring the deformation of the lattice. For this reason the authors investigated the relaxation of the elastic deformation of the lattice by means of the radiographic method. On this occasion the relaxation of the orientated microvoltages and not the initial macroscopic voltages were investigated. These voltages are orientated in the direction of the force by means of which the plastic deformation of the body was carried out. At first the method of investigation is described. The samples consisted of pure metal: Aluminium 99.99% and copper 99.92%. The average size of the grain was about 0.02 mm in the case of aluminium and 0.05 mm in the case of copper. Measuring results are shown together in a table and besides four diagrams are attached.

By accurate measurements sufficiently accurate relaxation curves were obtained. The relaxation curves of the elastic remaining deformation of the lattice in pure metals (aluminium and copper) at

Card 1/2

PA - 2131

The Relaxation of Orientated Microvoltages. I.

room temperature are represented by the same equations as the relaxation curves of the macroscopic voltages. As in this work the relaxation of the orientated microvoltages were investigated which result from ordinary expansion, it may be looked upon as being determined that the character of the relaxation process of microvoltages and the character of the relaxation process of macrovoltages are essentially equal. In both cases relaxation took place at room temperature at the expense of elementary displacement in the crystal grains. (4 illustrations and 2 tables).

ASSOCIATION: Institute for Mechanical Engineering of the Academy of Science of the U.S.S.R., Moscow.

PRESENTED BY:

SUBMITTED: 30.6.1956

AVAILABLE: Library of Congress.

Card 2/2

57-9-32/40

AUTHOR: Rovinskiy, B.M., Lyuttsau, V.G.

TITLE: The Relaxation of Non-Oriented Microstrains. Part II
(Relaksatsiya neoriyentirovannykh mikronapryazheniy. II)

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol. 27, Nr 9, pp. 2162 - 2166 (USSR)

ABSTRACT: The curves on the restoration of the original width of the diffraction lines on the X-ray pictures of plastically deformed pure metals (aluminum and copper) at room temperature are dealt with. The samples consisted of 99,99 % Al and 99,92 % Cu with an average size of grain of about 0,02 and 0,05 mm. The modification of the lines in the course of time of the restoration of the breadth of lines is essentially due to the relaxation of the non-oriented microstrains. The curves obtained for the restored breadth of line can, however, not be expressed by the relaxation equations of the oriented microstrains and those for the relaxation of macrostrains. This is due partly to the heterogeneity of the nonoriented microstrains and possibly also to the increase of block measurements during the relaxation process of the microstrains. This is due to the low degree of accuracy of measuring the breadth of lines in comparison to the measuring accuracy of the lattice period. There is 1 table, 6 figures, and 2 Slavic references.

Card 4/2

Inst. Machine Science H. 1957

SOV/120-54-5-31/32

AUTHORS: Lyuttsau, V. G., Rovinskiy, B. M.

TITLE: Prevention of the Blocking of Very Small Apertures Obtained by Firing Metallic Foils (Preokhraneniye ot zaglyvaniya res'na malykh otverstiy, poluchayemykh prokalivaniyem metallicheskikh fol'g)

PERIODICAL: Pribury i tekhnika eksperimenta, 1958, Nr 5, p 109 (USSR)

ABSTRACT: The authors have described a method for preparing very small apertures for shadow X-ray microscopy, using a camera obscura (Ref.3). Using the PMT-3 instrument, in which the diamond indenter was replaced by an electrolytically sharpened steel or tungsten needle, the end point of which consisted of a cone having an angle of 10-15° and an end point curvature of 0.1 μ , it was possible to prepare apertures 0.6-0.8 μ in diameter in a gold foil 20 μ thick. However, experiments have shown that such very small apertures produced in relatively soft metals do not last very long. After two to six hours they tend to "fill up" and during this process their form continually changes and becomes either elliptical or more complicated. The form of the aperture is apparently determined by the orientation of the crystallite in

SOV/120-5 -5-51/32

Prevention of the Blocking of Very Small Apertures Obtained by
Filling of Metallic Foils

which the apertures are produced. In order to prevent the gradual filling up of such a small aperture, a plate with a freshly made aperture was soaked in a very diluted solution of celluloid in acetone and was then dried in air. In this way a celluloid wall is produced across the aperture and this prevents the filling up process. This procedure leads to apertures which although covered by celluloid are nevertheless transparent to visible light and X-rays and also preserve their original circular form. Such apertures are not suitable for electron beams. There are no figures, but 3 references, of which 2 are Soviet, 1 is English.

ASSOCIATION: Institut mashinovedeniya AN SSSR (Institute of Mechanical Engineering of the Academy of Sciences, USSR)

SUBMITTED: November 13, 1957.

Page 1/2

LYUTSAU.V.G. : ROVINSKIY, B.M. : AVDEYENKO, A.I.

"Mixture (sic) Point X-Ray Sources for Point Projection Microscopy
and Diffraction Examinations,"

A paper presented at Second International Symposium on X-Ray Microscopy
and X-Ray Microanalysis Stockholm 13-18 Jun '59 / Soviet Interest in New
Techniques for Measuring Density Ultra Soft X-Rays in Outer Space.

SO: B 3, 136, 088

31 July '59

9(6)

AUTHORS:

Rovinskiy, B. M., Lyuttsau, V. G., Avdeyenko, A. I.

SOV/48-23-5-3/31

TITLE:

X-ray Shadow Microscopy (Rentgenovskaya tenevaya mikroskopiya)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,
Vol 23, Nr 5, pp 545 - 551 (USSR)

ABSTRACT:

In the first part of the present paper the authors discuss the methods of preparing X-ray silhouettes. Four graphs serve as a basis (Fig 1). The first of the methods dealt with here is the "contact method", in which the X-ray film is in contact with the sample under investigation. The resolving power attains here a maximum of 1μ . The second method is the one introduced by Cosslett and Nixon, in which, as is known, an electron beam is focused by means of electromagnetic lenses onto the anode, and from which the X-rays then depart. The resolving power attains here 0.1 to 0.2μ . The third method is the one described by the authors, which consists essentially of a tapered anode as point source of the X-rays. A resolving power up to 0.6μ is attained therewith. The last method described goes under the name of camera obscura. Here, the X-ray light originating from an areal source enters

Card 1/3

X-ray Shadow Microscopy

SOV/48-23-5-3/31

a chamber, containing sample and film, through a small stop. By this method the authors attained a resolving power below 1μ . In the years 1952 - 1953 the authors worked in the IMASH AS USSR on the development of X-ray shadow microscopes. It is pointed out that this type cannot cope with the resolving power offered by electron microscopes. A new model is described in the second part of this paper, complying with the third principle described above. A graphic section is shown and details are discussed. The maximum magnification made possible by this instrument, is 650fold; the negatives, however, may be magnified photographically up to 2000fold. The resolving power attains from 0.2 to 0.5μ . For an exemplification, two pictures of a net are shown, the first of which exhibits a 400fold magnification, and the second, by photographic methods, a 2000 fold magnification. The final part of the paper is devoted to the range of applicability of these microscopes; in this connection two pictures are shown depicting mineral samples, one of an insect preparation, two of histological preparations, and two pictures of metallic alloys. The conditions are specified under which each of

Card 2/3

X-ray Shadow Microscopy

SOV/48-23-5-3/31

them was taken; magnifications are in the range of 80fold to 800fold. There are 7 figures and 14 references, 7 of which are Soviet.

ASSOCIATION: Institut mashinovedeniya Akademii nauk SSSR (Institute of Machine Construction of the Academy of Sciences, USSR)

Card 3/3

24(4)

SOV/32-25-3-22/62

AUTHOR:

Lyuttsau, V. G.

TITLE:

X-Ray Shadow Microscopy of Inclusions, of the Heterogeneity of the Granular Composition and the Admixtures According to Their Boundaries (Rentgenovskaya tenevaya mikroskopiya vklucheniya, neodnorodnosti sostava zeren i primesey po ikh granitsam)

PERIODICAL:

Zavodskaya Laboratoriya, 1959, Vol 25, Nr 3, pp 311-315 (USSR)

ABSTRACT:

A lecture on this investigation was given at the VI Nauchno-tekhnicheskoye soveshchaniye po primeneniyu rentgenovskikh luchey k issledovaniyu materialov (Sixth Scientific-technical Congress on the Use of X-rays for Investigating Materials) in Leningrad, June 23 - 29, 1958. The method and the results of investigations of the structure of several alloys, carried out by means of X-ray shadow microscopy, is described. A new model of an X-ray shadow microscope was designed which, in principle, is a microprojector with an anode needle (Fig 1). The projector of the X-ray microscope (Fig 2) is partly made of teflon. The adjustment of the apparatus and the centering of the anode needle is carried out under the microscope. The following details have to be considered: 1) the thickness and the production

Card 1/2

SOV/32-25-3-22/62

X-Ray Shadow Microscopy of Inclusions, of the Heterogeneity of the Granular Composition and the Admixtures According to Their Boundaries

quality of the sample, and the parallel position of the sample surfaces; 2) the wave length of the radiation applied, and 3) the "recording ratio". The various forms of the deficiencies of the samples are described (Fig 3). Alloys on an aluminum and copper basis in various states (hardened, aged, after durability tests, etc) were investigated by rays of the nickel and chromium K-series and tungsten L-series. The radiographs of the microstructures of an AL-12 alloy (with explanations) (Fig 4) and of the structure of a tin-bronze alloy (Fig 5) are shown. There are 5 figures and 7 references, 3 of which are Soviet.

ASSOCIATION: Institut mashinovedeniya Akademii nauk SSSR (Institute of Mechanical Engineering of the Academy of Sciences, USSR)

Card 2/2

UMANSKIY, Yakov Semenovich; LYUTTSAU, V.G., red.; GORDON, L.M., red.izd-va;
ATTOPOVICH, M.K., tekhn.red.

[X-ray diffraction techniques for the study of metals] Rentgeno-
grafiia metallov. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po
chernoi i tsvetnoi metallurgii, 1960. 448 p.

(MIRA 13:12)

(Metallography)

(X rays--Diffraction)

KACHANOV, Nikolay Nikolayevich; MIRKIN, Lev Iosifovich; KOSTOGONOV, V.G.,
inzh., retsenzent; LYUTSAU, V.S., kand. tekhn.nauk, red.;
RZHAVINSKIY, V.V., inzh., red.izd-va; UVAROVA, A.F., tekhn.red.

[X-ray study of polycrystalline structures; a practical guide]
Rentgenostrukturnyi analiz (polikristallov); prakticheskoe
rukovodstvo. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.
lit-ry, 1960. 215 p. (MIRA 13:5)
(Metallography) (X rays--Diffraction)

82624

S/180/60/000/004/019/027
E193/E483

18 8200

AUTHORS: Lyuttsau, V.G. and Sinayskiy, V.M. (Moscow)

TITLE: The Effect of Oriented Microstresses on the Relaxation Stability of Aluminium Under Repeated Loading

PERIODICAL: ¹⁴Izvestiya ¹Akademii nauk, ¹⁶SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No. 4, pp. 120-123

TEXT: In one series of the experiments reported in the present paper, specimens of aluminium grade AV000 (annealed in vacuum at 200°C for 90 min and consisting of grains of average size approximately 0.05 mm) were loaded in the elastic range, held under load at a constant strain for 200 h to allow relaxation to take place, unloaded and held in this condition for some time, after which the loading-relaxation-unloading cycle was repeated several times. From the data on the variation of the cross-section of the specimens (whose total initial elongation during the entire course of tests remained constant), relaxation curves for the elastic deformation in the direction of the applied load were constructed; these are reproduced in Fig. 1. The second series of experiments was identical except that the process of relaxation was studied by accurate determination of the variation

Card 1/2

82624

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E193/E483

The Effect of Oriented Microstresses on the Relaxation Stability of Aluminium Under Repeated Loading

of the lattice parameters by the X-ray back-reflection technique; the relaxation curves based on these data are reproduced in Fig. 2. It was inferred from the results obtained that during relaxation of macrostresses elementary slips, taking place in the crystallites, produce plastically deformed micro-volumes. Interaction between the elastically and plastically deformed micro-volumes leads to the formation of oriented micro-stresses, the existence of which is easily revealed by X-ray examination. On unloading, partial relaxation of the microstresses, revealed by a decrease in the residual strain of the specimens, takes place. On reloading, the presence of oriented microstresses results in the relaxation of macrostresses proceeding at a slower rate, i.e. in a decrease of the magnitude of k_1 . Acknowledgments are made to Professor B.M. Rovinsky for directing the work. There are 3 figures and 4 References; 2 Soviet and 2 English.

SUBMITTED: December 1, 1959

Card 2/2

83242

S/129/60/000/009/008/009
E193/E483

2208
2308 only

18 1210

AUTHORS: Kolobnev, I.F., Lyuttsau, V.G., Candidates of
Technical Sciences and Aristova, N.A., Engineer

TITLE: The Effect of Manganese on the Heat-Resistant
Properties of Aluminium Alloys

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov,
1960, No.9, pp.38-41 + 1 plate

TEXT: Following their earlier work on various Mn-bearing
aluminium-base alloys, the present authors studied the effect of
manganese on the properties of alloy AL7, containing 4.5% Cu,
0.17% Fe and 0.3% Si, and alloy AL19 which contained 5.1% Cu,
0.83% Mn, 0.27% Ti, 0.17% Fe and 0.31% Si. The experimental
techniques employed included micro-analysis, mechanical tests
carried out at temperatures between 20 and 300°C on specimens
subjected to various heat treatments (solution treatment with or
without subsequent ageing) and so-called X-ray shadow microscopy
based on selective absorption of X-rays of various wave lengths by
various constituents of the alloy. The following conclusions
were reached: 1) The X-ray shadow microscopy technique is
eminently suitable for studying the structural changes taking

Card 1/3

83242

S/129/60/000/009/008/009
E193/E483

The Effect of Manganese on the Heat-Resistant Properties of
Aluminium Alloys

place in complex alloys subjected to various heat treatments or tested for creep at high temperatures. 2) The AL19 alloy, in the as-cast condition, consists of (a) the Mn-enriched, low copper content, solid solution matrix (α -phase), (b) the CuAl_2 phase crystallizing mainly in the form of coarse platelets, situated at the grain-boundaries of the α -phase, (c) the T-phase ($\text{Al}_{12}\text{Mn}_2\text{Cu}$) present in the form of both fine particles dispersed uniformly throughout the grains of the α -phase and relatively large particles, located at the grain-boundaries of the matrix and (d) phase Al_3Ti , present also in the form of platelike crystals. 3) After solution treatment (quenching), the AL19 alloy consisted of (a) the solid solution matrix with relatively higher Cu and lower Mn content, (b) the T-phase in the form of a large number of small particles dispersed in the interior of the α -grains and (c) the primary Al_3Ti grains. 4) The same alloy which, after quenching and ageing for 3 h at 175°C , was tested in creep at 300°C for 100 h under a stress of 6.5 kg/mm^2 , consisted of non-homogeneous α -solution within the grains of which a large quantity

Card 2/3

83242

S/129/60/000/009/008/009
E193/E483

The Effect of Manganese on the Heat-Resistant Properties of
Aluminium Alloys

of the T-phase particles was present. (This structure was very clearly revealed by the X-ray shadow microscopy.)

5) The complex, heterogeneous structure of alloy AL19, characterized by the presence of a large number of the T-phase particles, only several microns in diameter, inhibits movement of dislocations along the slip planes and grain-boundaries, whereby the high temperature strength of the alloy is increased.

6) The fact that the AL19 alloy retains its high temperature strength for long periods can be attributed to the low diffusion coefficient of manganese (as compared with that of Zn, Mg, Cu, Si etc.) and to the absence of a tendency of the T-phase particles, present in the interior of the α -grains and at the grain-boundaries, to coalesce. These factors explain also why the AL19 alloy is stronger than alloy AL7. (The stress that caused rupture of the former alloy after 100 h at 300°C was 6.5 kg/mm², the corresponding stress for the latter alloy being 3.0 kg/mm².) There are 4 figures, 1 table and 13 references: 9 Soviet, 3 English and 1 German.

Card 3/3

18.1250

39510

S/123/62/000/014/005/020

AC04/A101

AUTHORS: Rovinskiy, B. M., Lyuttsau, V. G., Geveling, N. N.

TITLE: Investigation of the relaxation resistance of nickel-base alloys

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 14, 1962, 23, abstract 14A150 (In collection: "Issled. po zharoprochn. splavam". V. 7, Moscow, AN SSSR, 1961, 122 - 128)

TEXT: The authors report on the results of investigating the relaxation of oriented residual micro-stresses in Ni-base alloys with Cr, Fe, Co and Al additions at temperatures in the range of from 20 to 400°C. The authors measured by the x-ray diffraction method the residual deformation of the lattice, originating as a result of tensions exceeding the elasticity limit (5 - 10%) and subsequent unloading of the specimens, and also changes in the residual deformations taking place in the course of time. It is proved that the optimum increase in the relaxation resistance of alloys is obtained with Fe, while Cr yields the poorest results. The relaxation resistance decreases with a temperature increase; this takes place abruptly in pure Ni and in the least degree in Ni-alloys with 12.4 atomic % Al. ✓

[Abstracter's note: Complete translation]

Card 1/1

5/126/61/011/002/016/025
E163/E483

AUTHORS: Rovinsky, B.M. and Lyuttsau, V.G.

TITLE: Dependence of the Relaxation Stability of Metals and Alloys on the Atomic Bonding Forces and Lattice Distortions and Correlation of the Relaxation Stability With Hardness

PERIODICAL: Fizika metallov i metallovedeniye. 1961, Vol.11, No.2, pp.285-289

TEXT: It has been shown earlier by the present authors (Ref.1-4) that the relaxation of both the initial stresses σ and the residual, oriented stresses is described by the equation

$$\epsilon_t = \epsilon_0 \exp \{ [k_1 t^p] \} \quad (1)$$

where ϵ_0 and ϵ_t denote the relative elastic deformation of the material, measured respectively on the application of the load and after time t during which the test piece deformed elastically. k_1 and p are parameters which characterize the intensity of the relaxation processes. k_1 being dependent on the Card 1/3

Dependence of the Relaxation

S/126/61/011/CO2/016/025

E193/E483

magnitude of the stress and p depending on the nature, structure and state of the material. The non-dimensional parameter p , to which earlier a term "plasticity index" was ascribed (Ref.1), appears to be a universal characteristic of the mechanical properties of metals, the object of the present work was to establish the relationship between p on one side, and the so-called lattice rigidity coefficient K , the degree of lattice distortion and hardness on the other. To this end, data obtained earlier by the present authors (Ref.1-4) on pure metals (Ni, Al, Cu) and alloys (Cu-Al, Ni-Al, Ni-Cr, Ni-Fe, Ni-Cu) tested between 18 and 400°C were analysed. Since p in Eq.(1) varies between 0 and 1, $R = (1/p)^{-1}$ (varying between 0 and ∞) was taken as the measure of the relaxation stability in the present work. The following conclusions were reached. (1) The relaxation stability R of pure metals varies linearly with K^2 ; this law however, does not apply to alloys. (2) The relationship between R and Brinell hardness number is also linear. (3) The increase in the relaxation stability and hardness of alloys is brought about by static lattice distortions caused by the introduction of the alloying elements atoms. (4) The decrease in the relaxation

Card 2/3

Dependence of the Relaxation . . . S/126/61/011/002/016/025
E193/E483

stability and hardness of pure metals at elevated temperatures is caused by an increase in the intensity of the thermal vibrations of atoms in the lattice. There are 5 figures and 7 Soviet references.

ASSOCIATION Institut mashinovedeniye AN SSSR
(Institute of Science of Machines AS USSR)

SUBMITTED. July 26, 1960

Card 3/3

188200

30449

S/126/61/012/003/001/021
E021/E180

AUTHORS: Rovinskiy, B.M., and Lyuttsau, V.G.

TITLE: Relaxation of distortions in the lattice of cold
worked metals

PERIODICAL: Fizika metallov i metallovedeniye, v 12, no.3, 1961,
305-313

TEXT: The spontaneous increase in intensity of Debye lines,
indicating relaxation of distortions in the lattice, was
investigated. Homogeneous fine grained, cubical samples were
prepared from 99.99% aluminium and electrolytic (99.92%) copper.
X-ray photographs showed that the samples possessed no texture.
An X-ray photograph was taken of each specimen. The specimens
were then slowly compressed in three mutually perpendicular
directions in several operations, giving a total reduction of
about 50%. The hardness of aluminium and copper increased by a
factor of two, which showed the presence of considerable lattice
distortions. Further X-ray photographs were then taken over a
period of 500 hours. The integral intensities of the (420)
aluminium and (400) copper lines were measured. After deformation,
Card 1/3

30449

Relaxation of distortions in the

S/126/61/012/003/001/021
E021/E180

the intensity of the aluminium line decreased by 45% and that of the copper line by 41-45%. After a further 500 hours the intensities of the lines were restored near to their original values. At the same time the intensity of the background decreased. These results were interpreted as meaning that lattice defects developed during cold working are healed after a time and that the distortion is therefore relaxed. The data were analysed and it was shown that the curves of relaxation of distortion could be explained by two independently occurring processes. The first of these processes takes place at a constant rate, and is completed in 940 and 1480 hours for aluminium and copper respectively. The second process takes place intensively at first and then the rate sharply decreases. This process is almost complete after 100 and 200 hours for aluminium and copper respectively. Hardness measurements confirmed that relaxation takes place with time. The results of studies of relaxation by hardness measurements will be the subject of a separate report. There are 5 figures and 13 references: 7 Soviet (two of them Russian translations from non-Soviet publications) and 6 non-Soviet.

Card 2/3

30449

Relaxation of distortions in the ... S/126/61/012/003/001/021
E021/E180

The four most recent English language references read as follows:

Ref.1: D. Bowen, R.R. Eggeleston and R.H. Kropschot.
J. Appl. Phys., 1952, Vol.23, 630.

Ref.5: B.E. Warren and B.L. Averbach.
J. Appl. Phys., 1949, Vol.20, 1066;
P.S. Weiss and I.R. Slark.

J. Appl. Phys., 1952, Vol.23, 1379.

D. Michell and E. Lowegrove.

Phil. Mag., 1960, Vol.5, No.53, 499.

Ref.7: F.R.L. Schoening and N.I. van Niekerk.
Acta met., 1955, Vol.3, No.1, 10.

Ref.11: M.S. Paterson,

J. Appl. Phys., 1952, Vol.23, No.8, 805.

ASSOCIATION: Institut mashinovedeniya AN SSSR
(Institute of Science of Machines, AS USSR)

SUBMITTED: January 11, 1961

Card 3/3

ROVINSKIY, B.M., doktor fiz.-matem.nauk; LYUTSAU, V.G., kand.tekhn.nauk

Conference on the nondestructive methods of material research.

Vest. AN SSSR 31 no.10:120-121 O '61. (MIRA 14:9)

(Quality control--Congresses)

KOSOLAPOV, Georgiy Fedorovich; LYUTSAU, V.G., red.; SHAROVA, Ye.A.,
red. izd-va; VORONINA, R.K., tekhn. red.

[Roentgenography] Rentgenografiia. Moskva, Vysshaia shkola,
1962. 331 p. (MIRA 16:3)

(X rays--Industrial applications)
(Metallography)

S/126/62/013/005/012/031
E073/E535

AUTHORS: Rovinskiy, B.M. and Lyuttsau, V.G.

TITLE: Relaxation of the hardness of cold-worked metals
and dependence of the hardness on crystal lattice
distortions

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.5, 1962,
724-727

TEXT: The spontaneous decrease (relaxation) in hardness of
cold-worked, 99.99% purity, aluminium (at room temperature) and
99.92% purity copper (at 80°C) was studied. Specimens
20 x 20 x 20 mm were machined and heat-treated so as to obtain
uniform grain size. After determining the hardness in the initial
state, the specimens were deformed by successive compression in
three mutually perpendicular directions until a total reduction
of 50% was reached in each of the directions. Then, the hardness
was again determined both immediately and at certain time
intervals up to a total of 5000 hours. During 500 hours the
hardness of aluminium dropped from 39.0 to 29.9 and that of copper
from 80.0 to 66.8 Brinell units. The hardness of the specimens
Card 1/3

Relaxation of the hardness ...

S/126/62/013/005/012/031
E073/E535

in the initially annealed state was 20 and 38 units for the aluminium and copper, respectively. The obtained hardness relaxation curves are similar to curves of the relaxation of lattice distortions in cold-worked metals. The obtained results are plotted in graphs, $\ln(H_t/H_0)$ vs. $f(t)$, where H_0 and H_t - hardness directly and after a time t after cold-working the metal, respectively. It is assumed that the hardness relaxation is caused by two simultaneous, independent processes which can be expressed by means of the equation

$$H_t = H_0 \exp \left[-k_H t - \left(\frac{1}{a+bt^{3/2}} - c \right) \right],$$

where k_H - speed of hardness relaxation caused by one of the processes; b and c - constants of the second process ($a = 1/c$). For one process, expressed by

$$k_H t = f(t) \text{ and } \left(\frac{1}{a + bt^{3/2}} - c \right) = f(t),$$

Card 2/3

Relaxation of the hardness ...

S/126/62/013/005/012/031
E073/E535

the relaxation times are 940 and 1400 hours for the aluminium and copper, respectively. For the second process the hardness relaxation is virtually complete after 100 hours for both aluminium and copper. Comparison of the relaxation curves of the hardness and of the residual lattice distortions, determined from measuring the integral Debye line intensity, shows complete agreement for aluminium. For copper agreement is not so good and this is attributed to differences in measuring conditions (additional influence of heating and cooling cycles). There are 4 figures and 1 table.

ASSOCIATION: Institut mashinovedeniya AN SSSR
(Institute of Science of Machines AS USSR)

SUBMITTED: December 7, 1960 (initially)
December 12, 1961 (after revision)

Card 3/3

GOMOZOVA, V.G.; FEDOTOVA, I.M.; LYUTTSAU, V.G.; BORODINA, M.L.

Properties of sol nuclei and of titanium hydroxide obtained
by the sulfuric acid method. Lakokras.mat.i ikh prim.
no.1:26-30 '63. (MIRA 16:2)

(Titanium hydroxide)
(Colloids)

S/032/63/029/001/010/022
B104/B186

AUTHORS: Rovinskiy, B. M., and Lyutsau, V. G.

TITLE: X-ray microflaw detection

PERIODICAL: Zavodskaya laboratoriya, v. 29, no. 1, 1963, 38-41

TEXT: Two radiographic methods of detecting flaws measuring less than 0.1 - 0.2 mm in metals are described. First method: camera obscura (fig.1). The diameter (2) in the W or Au plate is 0.005 mm, the plate thickness 0.2 mm. The enlargement ranges from 10 to 20. Second method: x-ray projector (Fig. 2). The electrons coming from the wire electrode (1) are concentrated on the tip of the point anode (2) through the electrostatic lens (3). The x-rays then move oppositely to the direction of the electron motion. (1) is a loop of a thin W wire. Using the first method, defects of a size no greater than 10μ can be traced, and using the second method even defects of 1μ can be detected. There are 6 figures.

ASSOCIATION: Institut mashinovedeniya
(Institute of the Science of Machines)

Card 1/2

X-ray microflaw detection

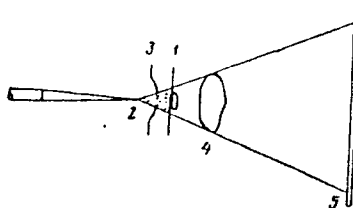
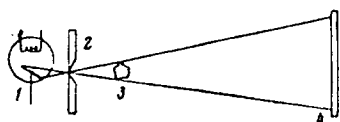
S/032/63/029/001/010/022
B104/B186

Fig. 1 scheme of the first method. Legend: (1) x-ray tube; (2) aperture of the camera obscura; (3) object; (4) plate.

Fig. 3 scheme of the x-ray microprojector. Legend: (1) cathode; (2) point anode; (3) electrostatic lens with window; (4) object; (5) plate.

FIG. 1

FIG. 3



Card 2/2

NOVIKOV, I.I.; LYUTTSAU, V.G.; ZOLOTOREVSKIY, V.S.

Intercrystallite concentration of microheterogeneity in aluminum-copper alloys at various speeds of crystallization. Fiz. met. i metalloved. 16 no.2:241-250 Ag '63. (MIRA 16:8)

1. Moskovskiy institut stali i splavov,
(Aluminum-copper alloys--Metallography)
(Crystallization)

ROVIN'SKIY, B.M.; KOSTYUKOVA, Ye.P.; LYUTTSAU, V.G.

Substructure and distribution of dislocations in single-crystal and polycrystalline aluminum. Kristallografiia 8 no.4:657-662 JI-Ag '63.
(MIRA 16:9)

(Aluminum) (Dislocations in crystals)

LYUTTSAN, V.G.; ROVINSKIY, B.M.

Dependence of the substructure on nonuniform concentration in alloys.
Kristallografiia 8 no.5:742-746 8-0 '63. (MIRA 16:10)

ACCESSION NR: AR4042235

S/0124/64/000/006/V077/V078

SOURCE: Ref. zh. Mekhanika, Abs 6V640

AUTHOR: Rovinskiy, B. M.; Lyuttsau, V. G.

TITLE: Certain results of study of stress relaxation in metals and alloys

CITED SOURCE: Sb. Belaksats. yavleniya v met. i splavakh. M., Metallurgizdat, 1963, 275-289

TOPIC TAGS: stress relaxation, metal, alloy, relaxation curve, reverse x ray method, deformation, elastic deformation

TRANSLATION: Describes new methods of obtaining relaxation curves by measurements of transverse deformation of a test piece whose initial longitudinal deformation remains constant, and a reverse x-ray method of transverse elastic deformation of lattice (at room and elevated temperatures). The latter is an adequate method of load measurement, necessary for maintaining given initial deformation with strict constant longitudinal deformation of test piece. Analyzes the relaxation

Card 1/2

ACCESSION NR: AR4042235

curve equation and considers structural changes in metal during stress relaxation. The x-ray method shows that, in the process of stress relaxation, structure perfection of reflecting crystallites decreases and coherent constraint in them is disturbed. Simultaneously there occurs a turn of grains and their mutual displacement. Thus, basic mechanism of stress relaxation in metal (at room temperature) is elasto-plastic, a shear mechanism. Stress relaxation is noticeably influenced by magnitude of grain, degree of preliminary plastic flow, content of impurities, test temperature, distortion of lattice, and level of constraining forces. Hardness of HB metal, similar to relaxation stability, is determined, on the one hand, by substructure and, on the other, by constraining forces and distortions of lattice. Therefore, among these mechanical characteristics a correlation is observed. Bibliography: 13 references

SUB CODE: NM, AS

ENCL: 00

Card

2/2

L 12100-66 EWT(m)/T/EWP(t)/EWP(b)/EWA(c) LJP(c) JD

ACC NR: AF6000529

SOURCE CODE: UR/0070/65/010/006/0845/0849

AUTHOR: Lyuttsau, V. G.; Fishman, Yu. M.; Svetlov, I. L.

ORG: Institute of Machinery Studies (Institut mashinovedeniya)

TITLE: X-ray studies of the dislocation structure of filamentary copper crystals

SOURCE: Kristallografiya, v. 10, no. 6, 1965, 845-849

TOPIC TAGS: fiber crystal, crystal lattice dislocation, x-ray crystallography, crystal structure

ABSTRACT: The high elasticity limit of filamentary crystals has not yet been clarified. One of the approaches to the problem is to study directly the dislocation structure of such crystals. The most appropriate method for the investigation of filamentary crystals of medium thickness is the micro x-ray diffraction approach developed by A. R. Lang which was applied earlier to the study of the dislocation structure of NaCl crystals (W. W. Webb, J. Appl. Phys., 31, 194, 1960). The present authors used a Hilger diffractometer to study the block and dislocation structure of filamentary crystals of copper. The main result of the investigation is the discovery that as the size of the crystals decreases they become increasingly perfect. The relationship between the structure and the

Card 1/2

UDC: 548.4

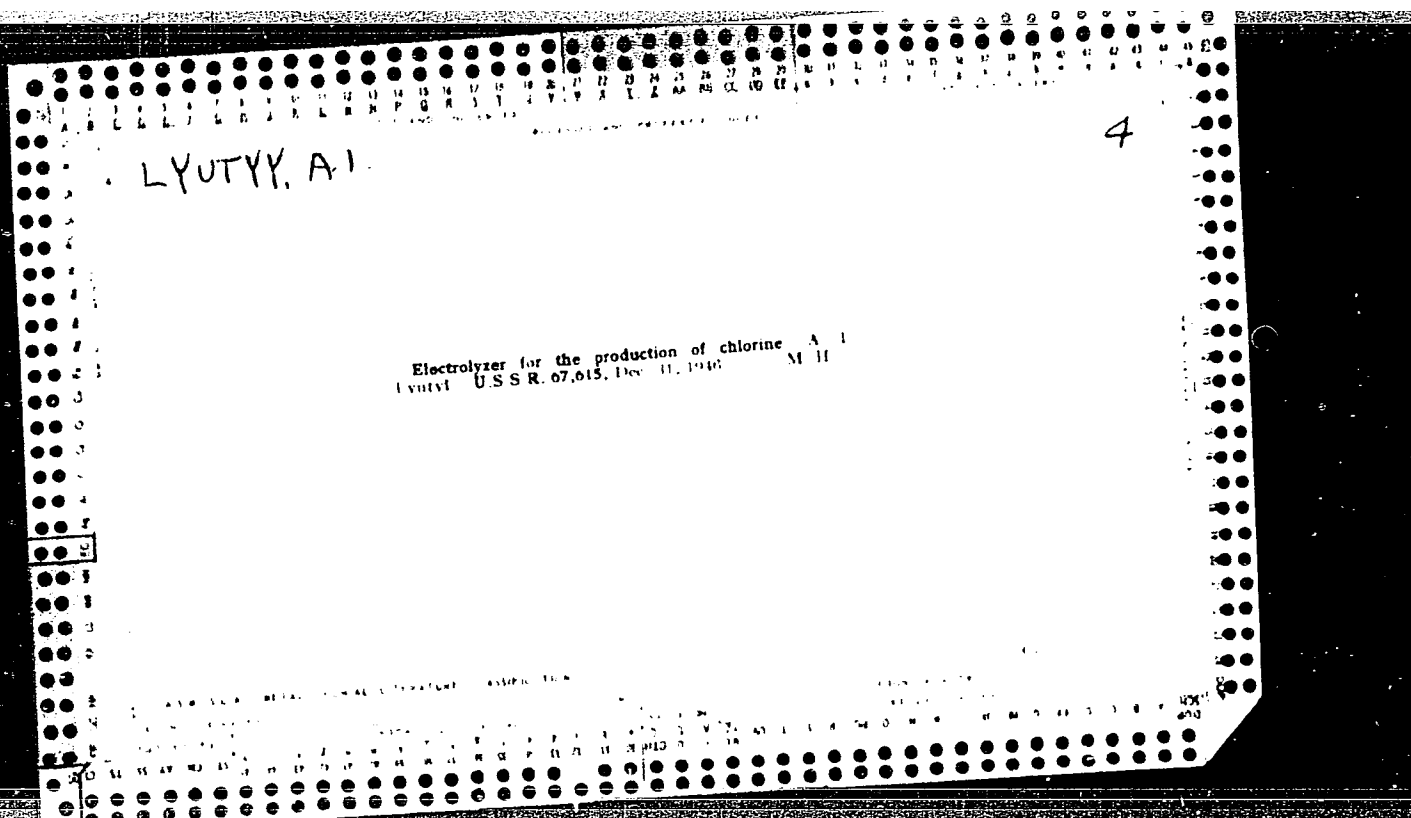
L 12100-66

ACC NR: AP6000529

9
strength of filamentary crystals will be established during future comparisons of the results of structural and mechanical investigations carried out on the same samples. The authors thank B. M. Rovinskiy, V. L. Indenbom, and V. N. Rozhanskiy for the discussion of the results of the work. Orig. art. has: 5 figures. 44.52-44.55

SUB CODE: 20 / SUBM DATE: 15Dec64 / ORIG REF: 006 / OEH REF: 012

Card 2/2



S/170/60/003/03/17/034
B014/B007

5.5310

AUTHORS: Lyutyy, A. I., Rossikhin, V. S.

TITLE: The Mechanism of the Influence of Additions on the Partial Pressure of an Element to Be Investigated in a Flame ¹

PERIODICAL: Inzhenerno-fizicheskii zhurnal, 1960, Vol.3, No.3, pp.101-104

TEXT: In the present paper the dependence of the partial pressure of free atoms of the element to be analyzed in a flame on the physico-chemical process is investigated. It is found that in acetylene-air flames (2500°C) in the case of a low alkali metal content (the authors confine themselves entirely to alkali metals) a complete ionization of the atoms occurs. In the case of an addition of salts of other alkali metals, the equilibrium between metal atoms on the one hand and the metal ions and electrons on the other is shifted to the side of the non-ionized metal atoms. The considerable intensification of luminescence to be expected on the strength of Sakhar's formulas is probably weakened by charged particles present in the flame. The authors derive formulas for the calculation of the partial pressure of the free atoms of an element in a flame with and without additions. Table 1 contains results calculated according to the formulas derived. They show that elements with a low ionization potential increase their partial pressure if an easily ionizing metal is added, whereas their partial pressure

Card 1/2

The Mechanism of the Influence of Additions on the Partial Pressure of an Element to Be Investigated in a Flame S/170/60/003/03/17/034
B014/B007

decreases with the addition of a difficultly ionizing metal. The increase of partial pressure is the greater, the lower are the partial pressures of the element to be investigated as well as of the added element. Further conditions at low temperatures (2000°C) are discussed, at which by addition of any quantity of any salts, only weakening of luminescence can be observed, as is shown by calculation. At temperatures of roughly 2500°C the same effects may be observed as at 2500°C , but they are more distinct. Finally, reference is made to a paper by D. Ye. Ivanov (Ref. 11) in which it had been shown that the intensity of the alkali atom lines is increased the more with the introduction of other alkali metals, the greater are the weights of the atoms of the element to be investigated and of the additional element. There are 1 table and 11 references 6 Soviet, 3 German, and 2 English.

ASSOCIATION: Gosudarstvennyy universitet, g. Dnepropetrovsk
(State University, City of Dnepropetrovsk)

Card 2/2

85162

S/139/60/000/005/012/031

E201/E191

11.4100

AUTHORS: Lyutyy, A.L., and Bugrim, Ye.D.

TITLE: The Effect of Sodium Vapour on the Intensity of Lines
and the Degree of Ionization of Elements in an
Acetylene--Air Flame

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika,
1960, No. 5, pp 69-76

TEXT: The degree of ionization and its changes are frequently
used to study the mutual interactions of elements in various
devices used to excite emission spectra. The present authors
studied the effect of easily ionizable Na vapours on the
emission of Sr and Ca (case I) and of Cs and Rb (case II)
atoms and ions in acetylene--air flames. In case I strontium and
calcium were introduced into the flame in the form of atomized
aqueous solutions of $\text{Sr}(\text{NO}_3)_2$ and CaCl_2 . A burner is shown
schematically in Fig. 1 and its modified form is given in Fig. 2.
In the modified burner sodium vapours were pre-heated in order to
avoid lowering of the flame temperature by cold sodium (such
cooling affected strongly the results). The spectra were recorded

Card 1/3

85162

S/139/60/000/005/012/031

E201/E191

The Effect of Sodium Vapour on the Intensity of Lines and the Degree of Ionization of Elements in an Acetylene--Air Flame

with a Zeiss glass spectrograph. Introduction of sodium vapours reduced strongly the emission intensity of Sr^+ ions ($\lambda = 4216$ and 4078 \AA) without altering materially the intensity of atomic Sr (4742 and 4811 \AA) and Ca (4227 \AA), i.e. introduction of sodium vapours shifted the ionization equilibrium in the flame by reducing the number of Sr ions (Tables 1, 2). In case II a monochromator YM-2 (UM-2) and a magnetoelectric mirror galvanometer M-21 (M-21) were employed. Caesium and rubidium were introduced into the flame by atomizing aqueous solutions of CsBF_4 and RbNO_3 . Sodium vapours intensified emission by Cs and Rb (Table 3); this may be useful in spectroscopic analyses. A satisfactory theoretical explanation of the behaviour of Cs and Rb is given (the experimental and calculated results are compared in Tables 4 and 5).

Acknowledgements are made to V.S. Rossikhin, N.A. Nesterko and I.L. Tsikora for their advice.

Card 2/3

85162

S/139/60/000/005/012/031
E201/E191

The Effect of Sodium Vapour on the Intensity of Lines and the Degree of Ionization of Elements in an Acetylene--Air Flame

There are 2 figures, 5 tables and 6 references: 4 Soviet, 1 German and 1 international.

ASSOCIATION: Dnepropetrovskiy gosuniversitet imeni 300-letiya
vossoyedineniya Ukrainy s Rossiyei
(Dnepropetrovsk State University imeni 300-th
Anniversary of Union between Ukraine and Russia)

SUBMITTED: November 9, 1959

Card 3/3

S/185/62/007/011/009/019
D234/D308

AUTHORS: Lyutyy, A.I., Nesterko, N.A., Rossikhin, V.S. and
Tsykora, I.L.

TITLE: Study of physical and chemical processes in the
equilibrium zone of an acetylene flame

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 11, 1962
1214-1216

TEXT: Metallic Na vapor was introduced into the outer
cone of the flame and the effect of its presence on the spectral
lines of Rb and Cs was studied. The intensity of the latter increa-
sed while that of the Ba and Sr lines became lower indicating a dis-
placement of the ionization equilibrium. This can be used for in-
creasing the sensitivity of spectroscopic analysis. The partial
pressure of free electrons in pure flame was determined by spectro-
scopic methods, adding Sr and Ba to air- and oxy-acetylene flames.
The order of magnitude of the result agrees with that of the pres-
sure determined from the saturation current. To increase the sensi-

Card 1/2

Study of physical ...

S/185/62/007/011/009/019
D234/D308

tivity of analysis for the alkali and alkaline-earth metals flames with a high concentration of free electrons should be used in the case of atomic lines, and those with a low concentration in the case of ionic lines. There are 1 figure and 2 tables.

ASSOCIATION: Dnipropetrovs'kyi derzhuniversytet (Dnepropetrovsk State University) ✓

SUBMITTED: March 24, 1962

Card 2/2

S/185/62/007/011/010/019
D234/D308

AUTHORS: Lyutyy, A.I., Nesterko, N.A., Rossikhin, V.S. and
Tsykora, I.L.

TITLE: Study of physical and chemical processes in the
reaction zone of acetylene flame

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 11, 1962,
1218-1221

TEXT: A detailed review of literature is given. The au-
thors include the results of experiments in which Ca and Mg were
introduced into the flame at atmospheric pressure. Intensity of
the Mg lines increased on passing from the outer zone to the reac-
tion zone if the excitation energy of the lines was above 4.4 ev.
It is concluded that the excitation is controlled by temperature
in the outer zone and is anomalous in the reaction zone; for exci-
tation potentials lower than 5 ev it can be thermal in both zones,
above 5 ev it can only be anomalous. There is 1 table and 14 ref-
erences: 18 Soviet-bloc and 6 non-Soviet-bloc.

Card 1/2

Study of physical and chemical ...

S/185/62/007/011/010/019
D234/D308

ASSOCIATION: Dnipropetrovs'kyy derzhuniversytet (Dnepropetrovsk
State University)

SUBMITTED: March 24, 1962

Card 2/2

S/051/63/014/001/006/031
EO39/E120

AUTHORS: Zhitkevich, V.F., Lyutyy, A.I., Nesterko, N.A.,
Rossikhin, V.S., and Tsikora, I.L.

TITLE: The spectroscopic study of dissociation and
ionization processes in the flame

PERIODICAL: Optika i spektroskopiya, v.14, no.1, 1963, 35-38

TEXT: The effect of halogens on the line radiation from
atoms and ions and also the halide and hydroxide bands of the
alkaline earth metals and alkaline metals were studied. The
alkali earth metals Mg, Ca, Sr, Ba, and the alkali metals Li, Na,
K, Rb, Cs, are supplied to an acetylene-air flame by means of an
atomizer from aqueous solutions of the chlorides. Radiation is
observed from the outer cone of the flame, 1.5 - 2 cm above the
inner cone. The introduction of halides into the flame
containing these metals produces a displacement of the
dissociation equilibrium leading to a decrease in the number of
free atoms and of the hydroxides of these metals and an increase
in number of their halides. The intensity of the ionic lines

Card 1/2

The spectroscopic study of ...

S/051/63/014/001/006/031
EO39/E120

of Sr and Ba is also increased by the introduction of halogens. This appearance of intense bands of the alkaline earth halides on the addition of halogens can be used for increasing the sensitivity of analysis for such elements as Mg and the halogens. There are 2 figures.

SUBMITTED: October 12, 1961

Card 2/2

LYUTYY, A.I. [Mutyi, A.I.]; NESTERKO, N.A.; ROSSIKHIN, V.S. [Rosykhin, V.S.];
TSIKORA, I.L. [TSykora, I.L.]

Cases of deviation from thermodynamic equilibrium in the
outer cone of a flame. Ukr.fiz.zhur. 6 no.6:851-853 N-D '61.,
(MIRA 16'5₀)

1. Dnepropetrovskiy gosudarstvennyy universitet im. 300-letiya
vossoyedineniya Ukrainy s Rossiyei.
(Spectrum analysis) (Flame)

LYUTYY, A.I. [Lutyi, A.I.]; NESTERKO, N.A.; ROSSIKHIN, V.S.; TSIKORA, I.L.
[TSykora, I.L.]

Study of physical and chemical processes in the reaction zone of
an acetylene flame. Ukr.fiz.zhur. 7 no.11:1214-1217 N '62.
(MIRA 15:12)

1. Dnepropetrovskiy gosudarstvennyy universitet.
(Acetylene lamps) (Flame)

ZHITKEVICH, V.F.; LYUTYY, A.I.; NESTERKO, N.A.; ROSSIKHIN, V.S.; YSIKORA, I.L.

Role of ions in a flame containing salt. Izv.vys.ucheb,zav.;fiz.no.2:
78-84, '63.

(MIRA 1685)

1. Dnepropetrovskiy gosudarstvennyy universitet imeni 300-letiya
vssoyedineniya Ukrainy s Rossiyei.
(Ionization) (Flame) (Salts)

ZHITKEVICH, V.F.; LYUTYY, A.I.; NESTERKO, N.A.; ROSSIKHIN, V.S.; TSIKORA, I.L.

Spectroscopic study of dissociation and ionization processes in a
flame. Opt. i spektr. 14 no.1:35-38 Ja '63. (MIRA 16:5)
(Alkali metal halides—Spectra) (Flame)

ZHITKEVICH, V.F.; ~~LYUTYI, A.I.~~; MESTERKO, M.A.; ROSSIKHIN, V.S.; TSIKORA, I.L.

Excitation of atomic spectra in the reaction zone of the acetylene—air
flame. Opt. i spektr. 14 no.3:336-341 Mr '63. (MIRA 16:4)
(Spectrum, Atomic) (Acetylene)